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Assessment of Common Health Problems, Nutritional Status and Social Aspects of Street Children in Rehabilitation Centers in Khartoum State

By

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DEDICATION

To the soul of my mother

To my father

To my brothers and sisters

To my teachers

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ABSTRACT

This is a descriptive cross-sectional institutional based study done in six rehabilitating centers for street children in Khartoum State. Of which, four are governmental centers and two are non-governmental.

The study aim is to assess the common health problems, nutritional status and social aspects of street children who were admitted in these centers.

The research tools include questionnaire, interview, physical examination and laboratory investigations.

A total of 355 children were included in the study, the age of them ranged between 5 -1 8 years, with a mean (SD) of 13.4 years ± (2.8) and a peak age group of 11 – 15 years.

There was obvious male predominance which constituted 84.5% of the study group. Males constituted 300 (84.5%) of the study group.

Drug and substance abuse was found in 155 (43.7%) of the study group, of whom: 91 (58.7%) used cigarettes, 84 (54.1%) snuff, 23 (14.8%) benzene, 90 (58.5%) glue, 10 (6.4%) (*bango*), 61 (38.3%) (*marisa*) and 18 (11.6%) used (*aragi*).

Approximately, two fifth 139 (39.2%) of the study group had sexual practice, of whom: 128 (92.1%) were heterosexual, 6 (4.3%) were homosexual and 5 (3.6%) had both practices.

Signs of skin diseases were documented in 190 (53.5%) of the study group, of whom: 42 (22.1%) had ulcers, 82 (43.1%) had scratch marks, 30 (15.8%) had hypopigmentation, 12 (6.3%) had hyperpigmentation, 50 (26.3%) had skin rash and 71 (38.4%) had scars.

Evidences of sexually transmitted diseases were detected in 56 (15.8%) of the study group, of whom: 5 (7.7%) suffered genital ulcer, 13 (20%) urethral discharge, 3 (4.6%) testicular swelling, 1 (1.5%) testicular pain, 7 (10.8%) supra

pubic pain, 7 (10.8%) vaginal discharge, 38 (58.5%) burning micturition and 25 (40%) suffered haematuria.

Hepatitis B (HB) infection was confirmed in 10.1% of the study group.

HIV was found in 3 (0.9%) of the study group, although it is not exceeding the general population proportion, but it is 3 times the proportion found among them 15 years ago.

Nutritional status was assessed by measuring the body mass index which revealed that 175 (49.3%) of the study group were found in the range of severe thinness, 45 (12.7%) moderate thinness, 66 (18.6%) marginal thinness and only 69 (19.4%) were found in the normal range.

ملخــص الأطـــروحة

تشمل هذه الدراسة بحثاً وصفياً مقطعياً مؤسسياً أجري في ستة من مراكز التأهيل لأطفال الشوارع في ولاية الخرطوم، أربعة منها مراكز حكومية واثنين منها غير حكومية.

تهدف الدراسة إلى تقييم المشاكل الصحية العامة والوضع التغذوي والجوانب الاجتماعية لأطفال الشوارع الذين أدخلوا بهذه المراكز.

وقد شملت أدوات الدراسة طريقة الاستبانة واسلوب المقابلة والفحص المادي والاستقصاءات المعملية.

وقد شملت ا لدراسة 355 طفلاً تراوحت أعمارهم بين 5 – 18 عام بمتوسط (انحراف معياري) 13.4 عاماً ± (2.8)، وأعلى مجموعة عمرية هي 11 – 15 عاماً.

وقد ساد العنصر الذكوري هذه العينة إذ كان عددهم 300 حيث كون نسبة 84.5% من مجموعة الدراسة.

كانت هنالك نسبة عالية من الأطفال الأيتام حيث مثل موت الأب 82 (23.1%) ووفاة الأم 27 (7.6%) وكلاالأبوين 43 (12.1%) لمجموعات الدرا سة. ومن بين 226 من ا لآباء الأحياء كان 250 (90.7%) منهم يعملون، من بينهم 108 (52.7%) عمال مهرة ، 64 (34.4%) عمال غير مهرة، 20 (9.8%) كانوا تجاراً ، 2 (1%) كانوا سلاطين، 4 (2%) لا يعرفون مهن آبائهم. ومن بين 281 أم حية كانت 171 (60.9%) منهن نساء عاملات، من بينهن 151 (88%) عاملات غير ماهرات، 14 (8.2%) عاملات ماهرات ، 3 (1.8%) كن مهنيات، 3 (1.8%) لا يعرفون ماذا تعمل أمهاتهم.

وقد وجد أن 155 (43.7%) من الأطفال يتعاطون المخدرات من جملة أعضاء المجموعة الدراسية. وقد كان 91 (58.7%) يدخنون السجائر، 84 (54.1%) يتعاطون التمباك، 23 (14.8%) يشمون البنزين، 90 (58.5%) يستنشقون الغراء، 10 (6.4%) يدخنون البنقو، 61 (38.3%) يشربون المريسة و18 (11.6%) يتعاطون العرقي.

كانت خمسي المجموعة الدراسية 139 (39.2%) يمارسون ا لجنس، منهم 128 (92.1%) يمارسونه مع الجنس الآخر و 6 (4.3%) يما رسونه مع جنسهم و 5 (3.6%) مع ا لاثنين معهاً.

وقد وجدت علا مات للأمراض الجلدية عند 190 (53.5%) من أعضاء المجموعة الدراسية، منهم 42 (22.1%) يعانون من القروح، 82 (43.1%) يعانون من الحكة، 30 (15.8%) من أ مراض نقص التصبغ، 12 (6.3%) من أمراض فرط التصبغ، 60 (26.3%) كانوا يعانون من الطفح الجلدي و 71(38.4%) من الندبة.

وقد اكتشفت شواهد على حدوث الأمراض المنقولة جنسياً عند 56 (15.8%) من مجموعة الدراسة. و كان 5 (7.7%) يانون من القروح التناسلية ، 13 (20%) من الافرازات الاحليلية، 3 (4.6%) من ورم المبايض، 1 (1.5%) من آ لام المبايض، 7 (10.8%) من آلام ا لحوض العليا، 7 (10.8%) ممن الافراز المهبلي، 38 (58.5%) من التبول المحرق و 25 (40%) من البيلة الدموية.

وقد تأكد وجود التهاب الكبد الفيروسي (ب) عند 10.1% من مجموعة الدراسة، كما وجد فيروس فقدان المناعة عند 3 (0.9%) من مجموعة الدراسة.

وقد تم تقدير الوضع التغذوي بقياس أرقام كتلة الجسم، والتي أوضحت أن 175 (49.3%) من المجموعة المدروسة كانوا في مدى النحافة الشديدة، 45 (12.7%) كانوا متوسطي النحافة، 66 (18.6%) كانوا ذوي نحافة حدية، بينما أن 69 (19.4%) كانوا عاديين.

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AIDS	Acquired Immune Deficiency Syndrome
HBc Ag	Hepatitis B Core Antigen
HBs Ag	Hepatitis B Surface Antigen
HBV	Hepatitis B Virus
HIV	Human Immunodeficiency Virus
STDs	Sexually Transmitted Diseases

بسم الله الرحمن الرحيم

قال رسول الله صلى الله عليه وسلم

((كلكم راع وكلكم مسئول عن رعيته...))

صدق رسول الله صلى الله عليه وسلم

1. INTRODUCTION & LITERATURE REVIEW

1.1 Background:

Sudan is the biggest country in Africa. Its resources rich, there are over 31 million people living on 2.5 million square kilometers of land. Sudan is estimated to have between 800 million and 4 billion barrels of oil under its sandy soil and considerable reserve of underground water [(1)].

Sudan had witnessed the street children phenomena at the beginning of 1980, when drought and desertification affected the Western region, also the civil war in the South which resulted in the increase of the displaced families who settled at the outskirts of the towns. [(2)]

Approximately 50% (14 million) are population under 18. The literacy rate in Sudan is 50% while primary school enrollment rate is 48%. Child labour (children aged 5-14) who are currently working constitute 42%. [(1)]

Khartoum region covers an area of 28000 square kilometers which constitutes approximately 1% of the total area of Sudan. Its population was estimated to be 81000 in the year 1904, which

constitute 4% of the population of Sudan at that time which was two million. [3]

According to the national census 1956 the population of Khartoum region exceeded half a million while in 1983 it became 1.7 million and 3.6 million in the year 1990. Between the years 1956 to 1983 the population of Khartoum region increased by 1.2 million with a mean increase of 8.8% per year. There was an increase in the population of Khartoum region between the years 1983 and 1990 by 1.8 million with a mean increase of 16% per year. These statistics revealed that, the number of Khartoum region population was in progressive increase. The population of Khartoum region represented 4.5% in 1956, 8.7% in 1983 and 14.1% in 1990 of the total population of Sudan. The increase of population of Khartoum region between the years 1983 and 1990 was explained by the migration from the South as a result of civil war and from the West as a result of drought. These displaced people settled in camps around Khartoum. The number of displaced population was found to be 684313 in Omdurman Locality, 558757 in Khartoum Locality and 594776 in Khartoum North Locality. [3]

Regarding urban-rural population ratio, 50.4% of Khartoum region population in 1956, 74.4% in 1983 and 81.1% in 1990 were urban. This indicates the rapid urbanization of Khartoum region. Countrywide 28.8% in 1956, 31% in 1983 of the urban population of Sudan were in Khartoum region. (3)

In 1990, the population of Khartoum region was 3.6 million which constitutes 18% of the total population of Sudan at that time. That means the total population of Sudan increased 12 times, while the population of Khartoum region increased 50 times in the period between the years 1904-1990. (3)

1.2 Definitions of street children:

The term street children was first used by Henry Mayhew in 1851 when writing London Labour and the London poor, although it came into general use only after the United Nation year of the child in 1979; before this street children were referred to as homeless, abandoned, or runaway. (4)

The term (street children) is hotly debated some think that, it is negative and stigmatizes children, others believes that, it gives them identification and a sense of belonging. It can include a very wide

range of children who: are homeless, work on the street but sleep at home, either do or do not have family contact, work in open-air markets , live on the street with their families, live in day or night shelter , spend a lot of time in institution (e.g prison). [5]

Street children were defined as any girl or boy who has not reached adulthood for whom the street (In the widest sense of the word including unoccupied, dwelling, wasteland, etc) has become his/her habitual abode and or source of livelihood and is inadequately protected supervised or directed by responsible adult. [6]

The definitions of street children adopted from UNICEF 1986 were as follows:

1.2.1 Children on the street; (home based):

Children who spend much of the day on the street but have some family support and usually return home at night.

1.2.2 Children of the street; (Street based):

Children who spend most of days and nights on the street and are functionally without family support [4]

Most of these street children miss love, protection and warmth of

parental care. They lack supervision and are devoid of education. Losing these legitimate rights they undergo physical and mental stress. They miss the opportunity to grow to the best of their potential. Instead they may suffer serious and often permanent physical and personality disorder making them vulnerable adults. Children of the street, who do not join their parents at night, miss much more. Street is the area of their work, recreation, rest and shelter. They may sleep under the open sky, under bridge, in a drainage pipe in an unclaimed shelter or in unused railway compartment. They use newspapers as their mattress and gunny bags as guilt to fight the cold. Few lucky ones get the chance to utilize a night shelter offered by an NGO or the social welfare department. [7]

1.2.3 United Nation definition:

According to the United Nation, (Absolute homeless) describes the condition of people without physical shelter who sleep outdoors in vehicles, abandoned buildings or other places not intended for human habitation.

(Relative homeless) describes the condition of those who have a physical shelter, but one that does not meet standards of safety.

These include protection from elements, access to safe water and sanitation, security of tenure, personal safety and affordability. [8]

1.3 Estimation of street children worldwide:

Developing an accurate understanding of the size and characteristics of the population of homeless children and youth is critically important for increasing public awareness, generating funding, planning interactions and programs, and evaluating the effectiveness of interventions. [9]

Efforts made to develop estimate regarding the size of the homeless child and youth population have been plagued with problems such as the difficulty in assessing the large number of homeless who do not regularly use shelter, ambiguity regarding the definition of what circumstance constitute homelessness and a lack of a standardized methodology for generating data and make estimates. [9]

No body knows the exact number of street children, because they move around a lot, within and between cities, they are often excluded from (Statistic-friendly) infrastructures (Schools, household,…etc); definitions of street children are vague and differing. [5]

Accurate estimation of the number of street children is very difficult

because they are not counted in the national census, educational or health surveys. The best estimated number ranges between 90-150 million worldwide, depending on the exact definition used. [6]

Most estimates of the number of street children fail to give a definition of street children or details of the methods of counting. Nevertheless, published estimates, which are essentially informed guess, are quoted and re-quoted by different authors until they are regarded as facts. In 1986 the United Nation Department of International Economic and Social Affairs estimated that there are 30-170 million street children worldwide. The large range illustrates how difficult it is to count street children accordingly. [4]

In Ethiopia, it has been estimated that there are 150.000 street children countryside with an estimated number of 50.000-60.000 in the capital city. [10]

In 1996, a survey was done in Yemen by the Central Statistical unit, it estimated the number there as 7000 street children. While the number in Morocco was estimated to be 240000 street children out of 10.000.000 children. [11]

In Egypt, it was estimated that there were more than 470 street

children in 1991, in 1998 reached 3000. Although this is a gross underestimate, it shows that the number of street children is increasing progressively. (11)

In Brazils alone, it is thought that of the 36 million children living in poverty, 7 million (20%) have moved away from their families and are street children. (12)

In Jordon, the number of street children who were arrested in the year 1995 was 573 the number increased to reach 673 in the year 1996, then declined to 611 and 537 street children in the years 1997 and 1998 respectively (13)

In Britain, the total number of reported run away was 43.000 in 1990, a rough incidence of 6 runaways per 1000 children per year. The population survey showed that episodes of running away are quiet common. One in 7 children aged under 16 say that they have run away overnight giving a rough incidence of 12 run a ways per 1000 children per year. (14)

In England and Wales, over 35000 children each year pass through the refuges with an unknown, but similar number referred on to other safe houses. It is not known how many children live in the streets,

some are as young as 12. A large, but unknown proportion of them end up living rough. (15)

By some estimates, India ha s over 414700 street children, mainly in big cities, an estimated 85000 – 100000 street children live in Bangalore alone. (16)

1.4 Estimation of street children in Sudan:

In 1960, 399 minors under the age of twenty were arrested in all of the Sudan, and 287 were identified as vagrants that are roaming the street without shelter.

In 1974, a different census estimated that there are no more than 1000 vagrant minors in Sudan. Contradictory findings in 1980 and 1985 pointed to the ongoing difficulties of estimating the number of children on the streets. In 1980, 25000 minors were estimated in Khartoum alone, and yet, between 1984 and 1985 it was estimated there were 12000 unaccompanied minors in Khartoum. Despite the lower estimate, it was recognized that the number of children on the street were increasing rapidly due to war in Southern Sudan and desertification in Western Sudan, which led to massive population dislocation and rural urban migration. In 1988, it was estimated that

there were 16700 street boys in Khartoum. While a different study in 1990 estimated that there were 14336 street boys and 771 girls in Khartoum. Although these figures are somewhat conflicting, it seems clear that the numbers of children on the street started increasing rapidly by the early eighties, and they have continued to rise in the past two decades. [17,18]

As a result of rapid urbanization and rural urban migration, it was observed that there was a consecutive increase in the number of street children from 2000 in the year 1978 to about 25000 in the year 1985.

In 1991, a socio-hygienic survey was done in the northern states (6 states); the survey covered 32 towns in these states. It concluded that the number of street children in Northern states were 36931. Khartoum State occupied the top of the list; 14336 street children (38.8%) followed by central state 12512 (33.9%), Darfur State 5698 (15.9%), Kordufan State 2825 (7.7%), Eastern State 1485 (4%) and finally Northern State 75 street children (2%). In the same survey, 78.3% of the study group had the following tribal origin: 31.2% from Darfur tribes, 27.5% from Kordufan tribes and 19.6% from Southern

states tribes. The age distribution 73% of the study group was between the ages 7-14 years. [19]

A social survey of street children in Kordufan State in 1991 gave an estimate of 2825 street children, they constitute 7.7% of the total number of street children in the Northern states. This survey was done in 6 towns in the state: 36% of them were in Elobeid followed by ELnohood (32%), Umrwaba (17%), Kadogli (9.3%), Eldalang (2.9%) and Bara (2.06%). Of the street children in Kordufan, 92% were from the same state, which indicates that the state did not received street children from other states. [20]

The last estimations was done in 2001 of the estimated 35000 unaccompanied children on the street of Khartoum, approximately 80% (28000) were believed to be working street children, and approximately 20% (6000) were believed to be full time street children. Girls constitute approximately 15% (4000) and 10% (600) of these groups respectively. [17]

1.5 Characteristics of street children:

In situation analysis - behavioral survey done among street children in Sudan, the data showed that 85.5% of the respondents are male

while 14.5% are female. Illiteracy rate among them is about 51.7%. Nearly half of them have at most basic schooling, while only 1.5% did not have secondary education. [21]

In the United States, a representative household sample of 6496 adolescent aged 12-17 years were interviewed 7.6% of the youth questioned reported that they had spent at least 7 night in youth or adult shelter (3.3%), public place (2.2%), an abandoned building boys were much more likely than girls to report having experienced homeless episodes. [22]

In a study conducted in Alexandria by EM. Salem et al they found that the age range was 7-16 years with a mean of 13.7 years. The familial background of the children was as follows: 45% had step parent , 26% had a mother as the head of the family (13% due to the death of the father and 13% due to the illness of the father), 2% left their family long ago and did not give any answer. The quality of the relationship with the family varies as follows: 45% had stepparents, 26% had a mother as the head of the family. (13% due to the death of the father and 13% due to the illness of the father), 2% left their family long ago and did not give any answers, 85% had a bad

relationship, while only 2% had a good relationship with their family. Regarding the educational status of the children, 76% did not attend school, 20% were attending a rehabilitation program, while only 4% were attending mainstream school. [6]

In a study, conducted in South Western Nigeria by Adeyinka A. Aderinto, revealed that street children are mostly males, have low-levels of education, are predominantly Uroba, and come from families with five or more siblings. Parents of street children commonly had low education and were mainly have unskilled occupations have polygynous marriage, which are also often characterized by marital disruption. [23]

In Rwanda Angola Veale studied the demographic characteristics of street children, the study concluded that, street children in Rwanda were predominantly adolescent boys, almost half of whom were homeless (42%) with a high proportion of orphaned children or children who had lost at least one parent. [24]

The characteristics of street children in Nazareth, Ethiopia were studies by Beyeney et al, they found that 90% of street children were males and 10% were females, the age ranged from 5 to18 with a

mean age of 12.9 (SD=3.16) 52.3% of the children left their families before their tenth birthday. 18.3% were attending school at the time survey. 54% of the children were on the street during the day with a house to sleep in at night and 45.4% were of the street and completely homeless 88.8% of the children had at least on of their parents alive.[25]

Surveys of street children in Latin America suggests that their ages ranges from 8 - 17 years, with average age on entering the street being 9 years. Girls from just 10-15% of street children, probably because of alternative strategies open to strategies open to them such as mothering younger Siblings, domestic employment, and prostitution. The few authors who have considered race suggest that in Latin America at least, black and mixed race children may be over-represented among street children. [4]

In a study done in vulnerability to sexually transmitted diseases in street children in Accra. The data showed that street children age range 8-19 years, they were of mean age 16.1 years with 75% aged 15-19 years and only 2% under 10 years of age. 60% of the sample is male.

The street children were from all regions of Ghana although the highest proportion of 22.1% was from the Ashanti region, 20.1% from the Northern region and 14.6% from the eastern region. [26]

A study of the background of street children of Recife showed that, the ages of the subjects varied from 9-18 years with a mean of 13.2+2.1 years and a mode of 12 years. The age at which children went on the street varied from 5 years (n = 4) to 15 years (n = 2 with a mean of 9.16 years $\pm$ 2.36. At the time of the interview the children had spent from one month to 12 years working on the street with a mean of 4.067 years $\pm$ 2.236. [12]

In U.K, the characteristics of street children who were studied by V Tischan et al, regarding the family composition, 69.6% of the families were singles and 30.4% were couples. The mean number of children was 3 (range 1-7). [27]

S. Abdelgalil et al, in Aracaju, studied the household and family characteristic of street children; 40% of their mothers were married, 37% of them were single, 14% remarried, and 8% widow, while the information about fathers regarding marital status were not available. 46% of the household were single female headed. 7% were single

male headed and only 40% biological fathers lived with the family. [28]

In Egypt, the records of 12000 street children between the year 1991 and 1999 gave data regarding the age groups, 9% of them were in the age group 9 years or less, while 39%, 43%, and 9% were in the age groups 9-12, 12-15, and 15 and more respectively. 60% of them were in Cairo, and 94% of them were illiterate. [11]

1.6 Street children and education:

A study on street children in Zimbabwe revealed that over 25% of the street children had never been to school, slightly over 20% (21.9%) had some lower primary education (Grades 1 to 3) whilst 38.2%had some higher primary education (Grade 4 to 7). Around nine percent (8.8%) had one to two years of secondary education while only 4.8% had three to four years of secondary education. The majority of the children in all categories had little or no education at all. [29]

In street children of Recife, Twice as many street children (38%) had left school when compared to the control group (19%), $P < 0.003$. In those not attending school the dropout had occurred after starting to work on the street in the case of 87%. A variety of reasons were offered for not attending school, the more commonly mentioned ones

were tiredness, lack of time, long distance of the place of work from the school, and lack of interest. Those who were attending school in both groups appreciated the value of education and wanted to do well in their studies. In general children in both groups were a grade or two behind that appropriate for their age, but the street children were much more so ($P<0.005$). Twice as many among the street children as in the comparison group could not read, but they did better in simple arithmetic test, often doing the suns mentally and refusing to use paper or pen. [12]

1.7 Factors leading to street life:

In general, there are many factors which can lead to street life. It can be classified into pushing and pulling factors;

1. Pushing factors: are those factors inside the family which forced the child to be in the street.

2. Pulling factors: are those factors in the street which attracting the child to go to the street.

Most children who work do not have the power of free choice for nor do they have career options. The vast majority were pushed into work that often is damaging to their development due to poverty absence

of education and dysfunctional families. There is marginalization in school and jobs on the basis of income, sex, race, religion or residence. Urban rural divide leading to migration of families or children to cities for better prospect is another important reason. Many families of street children are dysfunctional. The parents inability to provide physical, emotional or economic support and deteriorating interpersonal relationships lead to disintegration of the family. Physical abuse, sexual abuse, feeling of being unemployed and unwanted in the family are other factors responsible for the drift. Civil unrest in many countries in past few years and other disasters natural and man made have further uprooted many families. [7]

The Key factors pushing children on to the street in Egypt are family break up; (divorce, separation, remarriage and death), large family size child abuse and neglect, low income and educational levels, unplanned rural urban migration and children's difficulties in coping with the formal school system and increasing the rate of drop out.[6]

Scanlon et al studies he street children in Latin America, regarding the factors behind being street children. They identified several related economic social and political factors have been liked with

phenomena of street children. Land reform, population growth, drought, rural to urban migration, economic recession, unemployment, poverty and violence have all being implicated. Brazil, thought to have the highest number of street children in Latin America, has one of the most unequal distributions of wealth in the world. The top twenty of the population receives 26 times the income of the bottom 20%, and half the population survived on 14% of the national income. Street children have been described as victims of economic violence. [4]

Street children of Zimbabwe cited a number of reasons for being on the street. These include earning income being orphaned, abuse by step father/step mother/some relatives, inadequate and support by parents or guardians and peer pressure. The study revealed that, the majority (35.3%) of the street children stated that earning income for their families as their main reason for being on the street. Just over 30% said they were orphans and did not have care givers, while 18.3% said they were abused by parents, 7.3% were employed to work on the street and 6.4% had committed a misdemeanour and had run away from home. [29]

The reasons mentioned by Recife street children for being a street child varied and some children mentioned more than one reason. The most commonly mentioned-cause (82%) was economic need. The other reasons as perceived by the street children were independence, work, violence at home, being useful individual, illness in family and order by parents. Violence at home and the desire for independent were more frequently mentioned by the older children.[12]

A sample of 223 adolescents, who sought services from runaway and homeless use programme in New York State during 1986-1987 was identified as having a history of maltreatment. Of the sample, 60% has allegedly experienced physical abuse, 42% emotional abuse, 48% neglect and 21% sexual abuse. Over one third pushed out of their home by their families. Biological mothers were the most frequent cited perpetrators of maltreatment (63%), followed by biological father (45%). [30]

The reasons for becoming homeless can include financial, legal, familial, social and medical problems. [31]

In a study of telephone calls to child Line from 2205 run away and homeless children, they found that over a third had ran away because

of child abuse, children mainly reported physical abuse (593 child callers), 169 callers reported sexual assault, while 26 of these describing both sexual and physical assault. [32]

1.8 Street children and drug abuse:

The non-medical use of chemical substance in order to achieve alteration in psychological functioning has been termed substance use. [33]

Deepti Pagare et al studied the risk factors of substances use among street children from Delhi. They found a total of 68.7% subjects reported substance use in their family among whom 86% reported substance use by the father. Among the children interviewed 57.4% (n=66) had indulged in substance use any time in their life. The minimum age at starting substance use in the study was 5.5 years. The most common substance consumed was nicotine, as cigarette or (bidis) and (gutkha). Inhalant volatile substance use in the form of sniffing of adhesive glue petrol gasoline, thinner and spirit was reported by one fourth of the children. [33]

The health problem of street children in Eldoret, Kenya was studied by Ayaya SO, Esamai Fo. They found that the common of addiction

was cigarette (37.6%) and none of the school children was taking any drugs of addiction. [34]

In a study done in Bangalone, India by Jayshree Rama Krishna et al, among street boys found that drug and alcohol use is common. Half the boys inhaled solution (typewriter correcting whitener) and nearly half (46%) consumed alcohol. [16]

E.M. Salem and F. Abd Ellatif studied the socio-demographic characteristic of street children in Alexandria. They concluded that substance use by street children is very common, 88% reported sniffing glue, 75% cigarette smoking, 40% were drug addicts, 367% inhaled solvent, 24% bango (a form of the plant cannabis sativa), 6% alcohol and 1% heroin. [6]

A review of street children in Latin America done by Scanlon showed that several studies have confirmed that around 80% of street children use drugs regularly. Traditionally this has been glue which is readily available and a cheap way of coping with hunger, fear, loneliness and despondency. Indeed communal drug use may be an important factor for integrating children into street life. The use of crack cocaine was reported to have increased dramatically among

street children although accurate figures are as yet unavailable. [4]

In 1991, the drug abuse of street children in Northern State of Sudan was found to be as follows: 44% of the study group did not used drugs at all, while 47%, 41%, 29%, 11.57% and 2.45% used snuff, cigarette, glue, benzene and cannabis respectively. [19]

Banaga in Sudan reported that, 50% of the study group used tobacco smoking, 38% petrol inhalation and 36.7% alcohol drinking. [35, 36]

Greene JM et al found that, for almost every substance, substance use prevalence was highest among the street youth. Shelter youth and household youth with recent runaway/homeless experiences reported similar rate. In the household surveys substance youth rate were lower and were generally comparable. [37]

1.9 Nutritional status of street children:

In Jakarta, the nutritional status of 89 school-aged children living and working in the streets of Jakarta were assessed. The distribution of height for age relative to the NCHS reference standard indicates that, 52% of the children were stunted (below the third percentile of the standard). However, the distribution of weight for age was close to that of the reference population standard, and only 7% of the children

were wasted (below the third percentile of the standard). Comparison of the data from these street children with those of other school aged children living in Jakarta Slums shows that street children weigh more and are taller than their socio-economic peers. [38]

According to a survey done in 1990, 62% only of street children had 3 meals per day, 30% of them buy their food, 41% get meals from voluntary organizations, and the rest from other resources, like stealing, begging and garbage. [19]

In 1992, survey was done in social and health profile among street children, the nutritional status was assessed, 20% of the study group were found to be stunted and 36% were wasted. Regarding signs of nutrients deficiency, it's found that, 25% had smooth tongue and 9.7% had choilenychia, followed by angular stomatitis which represented 18.34% and Vitamin A deficiency 7.3%.Pellagra rash was detected in 2 % of these children. [35, 36]

1.10 Health problems of street children:

Street children are more vulnerable than other children as a result of incompatible environment, their experience of different violence, in addition to their nutritional situation which can lead to the

deterioration of their health status.

There are several reasons why homeless children and their families cannot access mainstream health and social care services despite their high level of need. The main one is their mobility between different health and local authority sectors. As most families will have changed address frequently or urgently they are less likely than the rest of the population to register with a general practitioner (GP) or in the best of situations to be registered as temporary patients with a GP covering the hostel residents this reduce their access to primary and secondary medical care as well as to immunization and other preventive health procedures. [39]

The struggle for survival on the street means responding to immediate needs. One's priorities become shelter, food and safety, and apart from emergencies, health becomes secondary. Because of the immediacy of life on the street, appointments made for next week are easily forgotten and rarely kept. Leading to episodic encounters with the health care systems after wound have festered or illnesses have grown severe. When questioned about their physical problem, most homeless people focus on their feet, teeth and eye sight rather

than on acute or chronic illnesses. [31]

Linda weinreb et al studied the determinates of health and service use patterns in homeless and low income housed children. They found that mothers of homeless children as being in fair or poor health compared with their housed counterpart. Homeless children were reported to experience a higher number of acute illness symptoms including fever, ear infection, diarrhoea and asthma. Emergency department and outpatients medical visits were higher among the homeless group. After controlling for potential explanatory factors, homeless children remained more likely to experience fair or poor health status (adducted odds ratio OR= 2.88;95% confidence interval (CI) , 1.16, 4.87, and a higher frequency of outpatients (OR=1.71;95% CI, 1.18,2.48) and emergency department visits (OR : 1.21;95% CI,0.83,1.74). Mothers emotional distress was independently associated with acute illness symptoms and frequent use of out patient and emergency department settings.[40]

In a prospective case control study, social factors, that influences the decision to admit in 77% of homeless children and 43% of controls.

More of the homeless children were only mildly ill (33/70) than those from permanent housing (22/77). Although 3 of the homeless children died or overwhelmed infections, compared with none of the control.[41]

In Klein JD et al study among street youth, it's found that, half of street youth and 36% of the sheltered youth did not have a regular source of health care ($P < 0.05$). One forth of street youth and 18% of shelter youth also reported serious health problems within the past year of the study ($P < 0.05$). Street youth were more likely than shelter youth to have used emergency treatment (36% vs. 29%, $P < 0.05$). An alcohol or drug related emergency treatment (25% vs. 13%, $P < 0.05$). Shelter youth with a regular source of care are more likely to use non-emergency sites than those without a source of primary care (46% vs. 20%, $P < 0.001$). Few sheltered or street youth perceived shelter clinics, clinics for many youth, or 3 youth clinic to be available to meet their emergency care need. [42]

1.10.1 Sexual practice among street children:

Sexual practice among street children is very common as many study revealed this.

In Sudan the percentage of street children practicing sex before

marriage and/or out side marriage at the time of the study was 32.6% while those who practiced sex in the previous times were 23.1% on the other hand those who never practiced sex out side marital life were 43.4%. Regarding the reason mentioned behind practicing sex, 29.2% of the respondents said for enjoyment, 28.6 % mentioned economic reasons, 11.7% initial and 5.8% to spend time. [21]

Sexual abuse was detected by Banaga in 21% of the study group, child prostitution and homosexual behavior for earning money was not a feature of the study group. [35, 36]

Most of the Montreal street youth were sexually active. 99.3% (434/437) reported hetero sexual relations. 18.3% said they had had at least one homosexual partner in their life-time. Proportionately more girl than boys reported homosexual activating (24.6% V. 15.5%)

More than half (55.7%) of participants reporting heterosexual relations and 21.3% of those reporting homosexual relations had more than 10 partners in their life. One quarter of the participants reported having ever had sex in exchange for such items as money gifts, drugs or a place to sleep. [43]

Data from Accra showed that most respondents are sexually active

and typically had their first sexual experience on the street and with prostitutes. Most have multiple sex partners, some engage in homosexual activity and they are rarely and inconsistently use condoms despite being aware of AIDS. Some girls provide sex in exchange for money. [26]

In USA, a nationally representative sample of shelter youths and a multi-city sample of street youths were interviewed approximately 28% of street youths and 10% of shelter youths reported having participated in survival sex. Which was associated with age, days away from home, victimization, criminal behavior substance use, suicide attempts sexually transmitted disease and pregnancy. [44]

Alexandria street children reported 92% of them being sexually active 76% reported having been sexually abused, 16% were sexual offenders and 8% refused to answer. [6]

In Zimbabwe street children, slightly over a quarter (26.2%) of them reported that they had sex within the previous six months while the majority 73.8% had not had sex within the past six months. Of those who reported having had sex within the past six months 43.8% reported they had one sex partner while the rest had two or more

partners. The majority of those who were sexually active (50.8%) were in the 11-15 yeas age group while 38.5% were in the 16-18 yrs age group and 10.8% were in the 6-10 yrs age group. [29]

Shelter and street youth at much greater risk of having ever been pregnant than were youth in household regardless whether they had recent runaway of homeless experiences these results were obtained by Jody Green et al they found that youth living on the street had the highest lifetime rates of pregnancy (48%) followed by youth residing in shelters (33%) and household youth (<10%). [45]

Mac Donald NE et al studies the correlates of sexual risk taking activity of the 712 street youth surveyed the majority were sexually active (95% males, 93% females). The lowest STB rates were unemployed males (5%) and the highest 68% in female sex industry workers. STI/HIV high risk behaviors were frequent with 47% of males and 41 % of females having had at least 10 different partners.[46]

Sixty one percent of street boys in India, Bangalore were sexually active. 4 initiated at the age 9 or younger most; (36 out of 74) were initiated between ages 10-12, (21/74) were 13-14 years old. 62% of

them reported anal sex, 57% vaginal intercourse, 41% self masturbation, 32% mutual masturbation, 14% oral sex and only 5% sex with eunuchs. [16]

Noell et al studied the risk factors for STI, they found that the relationship between incident STI and the primary behavioral risk factors (i.e condom use, number of partner, number of times) was significant.

In females, both sexes with older partners and use of marijuana in association with sex were significant predictors for incident STI. For males there was no increased risk associated with either factor. A history of injection drug use was also significantly associated with prevalent HBV infection and prevalence HCV infection. [47]

In a study conducted in 1993 in San Francisco, Denver and New York City y Kral AH et al revealed that, nearly all (98%) reported having engaged in sexual intercourse of whom 49% first had intercourse by the age of 13. Among males, (23%) indicated that they exchanged sex for money, as did 14% of the females. Overall (75%) reported having sex while under the influence of alcohol or drug. [48]

1.10.2 Sexually transmitted diseases among street children:

Since sexual practice among street children is very common, specially unsafe sex, they are vulnerable to contract a lot of complications as a results of these practice, one of these are sexually transmitted diseases.

In Sudan in survey done in three states, it revealed that 22.5% have urine infection, 10.8% have secretion discharge 3.4% have itching but only 5.5% have sore organ. [21]

Evidence of sexually transmitted diseases and sexual abuse were present in 17.7% and 27.5% respectively in the study of Banaga.[35,36]

The true incidence of prostitution in runaway or homeless is not known. It is not readily disclosed, but recent figure suggest an incidence of up to 20%. [14]

Noell et al studied the sexually transmitted disease in a homeless adolescent population. The STI incidence was higher among female than male. (16.7% versus 9.8%); odds ratio, 1.83; 95% CI 1.05 - 3.20) whereas for HCV infection was higher among males than females (11.6% versus 0% odd ratio undefined; $P < 0.01$). Two of 584 sera (0.3%) tested were positive for anti-HIV. [47]

1.10.3 Hepatitis B virus infection among street children:

Hepatitis B virus a major cause of chronic liver disease and primary hepato-cellular carcinoma. Among adolescents and young adults it is transmitted mainly thought unprotected sexual intercourse. The sharing of injection material among drug users is another major risk factor. Tattooing and body piercing also may play a role but the magnitude of this risk is not well known. [43]

Among Montreal street youth, of the 434 participant who completed the laboratory tests, 40 were found to be positive for one or both HBV markers for a rate of 9.2% (95%CI 6.7-12.3%) 1.6% were HBs Ag positive. It found that having more than 10 sexual partner in their lifetime, having been engaged in prostitution, having had homosexual partner and having had oral sex with heterosexual partners were not associated with HBV infection. On the other hand, being over 18 years of age having injected drug and having had a sexual partner with a history of unspecified hepatitis were all independently associated with HBV infection. [43]

Banaga in Sudan found that, 56 (18%) and 60 (20%) of the studied 300 street children were positive for HBsAg and HBcAg

respectively.[35, 36]

Wang E E studies HBV and HIV infection in street children in Toronto, Canada, 7 of 43 (16%) admitted prostitutes compared with 1 of 44 (2%) other street youth and non of 27 controls demonstrate anti-Hepatitis B surface antibodies. The higher rate of seropositivity in admitted prostitutes was statistically significant ($P < 0.009$). Two factors, number of partners ($P < 0.05$) were identified as predictive of seropositivity [49]

1.10.4 HIV among street children:

The present epidemic of AIDS was originally described in homosexual male and subsequently in intravenous drug abusers, Haitians and haemophiacs.

J. Oleske et al reported that, children living in high risk household were are susceptible to AIDS, and that sexual contact drug abuse or exposure to blood products is not necessary for disease transmission. [50]

The first cases of pediatric AIDS were reported by M.J. Cowan, they have found three females half sibling who had clinical and laboratory evidence for AIDS. Their mother is a prostitute/ drug addicts with

clinical and laboratory evidence of AIDS. Histo-compatibility typing is consistent with the history of different fathers with each child. These findings indicate AIDS and suggest vertical transmission during the peri-natal period. [51]

In 2000 an estimated 25.3 million persons in Sub-Saharan Africa were infected with HIV, and the average national prevalence of HIV infection among persons age 15-49 years was 8.8%. Approximately 4 millions new infections occurred during 2000. approximately 10% of persons age 15-49 years are infected in 16 countries including 7 in Southern and eastern Africa were approximately 20% are infected. In Botswana, the country with the highest prevalence 36% of the adult population is infected with HIV. [52]

In 1992, Banaga found that only one of the 300 children study was HIV positive. [35, 36]

In situation analysis behavioral survey, it was found that, 2.2% of the street children were positive for HIV infection. [21]

1.11- JUSTIFICATION AND OBJECTIVE

1.11.1 Justification

1.11.1.1 The problem of street children is increasing in Sudan and worldwide.

1.11.1.2 There is limited number of studies done among street children in Sudan.

1.11.1.3 The problem of street children has social implication that impacts on the community.

1.11.2 Objectives

1.11.2.1 General objective:

The aim of this study is to assess the health, nutritional status and social aspects of street children.

1.11.2.2 Specific objective:

- To study the prevalence of HIV, HBV, STD, skin diseases and drug abuse among street children.
- To assess the nutritional status of street children.
- To study the social factors that lead to street life and the social impact of street life among street children.
- To describe the services provided in the rehabilitating centers.

2- MATERIAL AND METHODS

2.1 Nature of the study:

It is a descriptive, cross-sectional community based study.

2.2 Study area:

The study is Khartoum state in the following centers:

2.2.1 Institutional centers: These are supervised by Ministry of Social and Cultural Affairs - Khartoum State. There are three governmental centers for rehabilitation of street children in Khartoum state:

- El Rashad Center for Rehabilitation of Street Children. This center is located in Soba area (for street boys)
- Tayba Center for Rehabilitation of Street Children, it is found in Gabal – Awlya locality (for street boys)
- Dar El Bashair Reform Home in Karari locality for street girls.
- Reformatories: These are under the supervision of Ministry of Interior. These are two reformatories in Khartoum state.

2.2.2 Alternative family care supervised by national non-governmental organization: the following organizations implement and supervise the program.

- Amalm Friends for Children Society: It supervises seven alternative families.
- Sabah Association for Children Development. It supervised five alternative families.

2.3. Study duration:

From June 2004 to December 2004

2.4 Study population:

All street children in the above mentioned rehabilitation centers were Included.

2.5 Sample size and sampling technique:

2.5.1 Sample type:

It is an inclusive type of sample, included all children in the rehabilitation centers.

3.5.2 Inclusion criteria:

- All children in the rehabilitation centers.
- Age group 7-18 years.

2.5.3 Exclusion criteria:

- Refused consent

- Very ill child who need urgent referral.

2.6 Research tools and methods:

2.6.1 Questionnaire:

This included questions to obtain information about street children's health, nutritional status and social aspects including personal data, information about family, Attracting factors that lead to street life, drug abuse and information about sexually transmitted diseases, skin disease and nutrition, in addition to information about the care providers.

2.6.2 Physical examination:

The physical examination was done including the general condition, signs of anaemia, anthropometric measurement by doing weight and height, oral examination looking for oral hygiene, oral thrush and dental carries; examination of the chest looking for signs of consolidation collapse and plural effusion; examination of the abdomen looking for hepatomegally, splenomegally, masses and ascetic; examination of cardiovascular system looking for anaemic heart failure and signs of pericardial effusion; examination of the skin

looking for ulcers, scratch marks, skin rash and hypo or hyper pigmentation, genital examination and perianal examination.

Body weight with minimum clothes was obtained and recorded. The weight was measured by using a stand on scale, on which the child was asked to stand up.

The height was obtained by using height anthropometer (Stadiometer). The child was made to stand on the floor with the feet in the parallel position and with his buttocks, shoulders and back of the head touching the wall while the head in the erect position and the arms were hanging loosely at the sides. The head piece of the scale was brought down perpendicular to the wall and parallel to the top of the head.

2.6.3. Laboratory Investigations:

2.6.3.1 Specimen collection and storage: blood was taken by normal venipuncture technique. 2.5 milliliter was put on EDTA container for the purpose of hemoglobin (Hb) level detection and ESR. 3 milliliter was put on a clean dry plain container and was allowed to clot. The serum was separated at room temperature and was kept frozen at -20˚ for the purpose of HIV and HBV investigations.

2.6.3.2 Hb level: was measured by chlorometer in grams per deciliter

2.6.3.3 HBs Ag was detected by pathozyme-HBs Ag kit. It is an enzyme-immunoassay for the detection of HBs Ag in human serum. It is manufactured by Omega Diagnostic LTD. The antibodies used in this kit have been selected to provide a serum which will detect small quantities of the HBsAg including all eight subtypes of Hepatitis B virus.

2.6.3.4 HIV antibodies were detected by ELISA. Vibronostika HIV uni-form II plus O was used as a kit in the first run. It is produced by bioMerieux bv. It is an in vitro diagnostic medical device. The sensitivity of this test is 100% and the specificity is 99.92%.

The second run was done by another kit which was enzygnost Anti-HIV1/2 plus. It is an enzyme immunoassay for the detection of antibodies to HIV_1, HIV_2, and HIV_1 (subtype) antigens. It is manufactured by Dade Behring Marburg GmbH. It is 100% sensitive and 99.3% specific.

HIV was confirmed by Western blot using HIV W. blot kit which is manufactured by J. Mitra & Co. Ltd. HIV W. blot is an in vitro qualitative immunoassay for the detection of antibodies to HIV_1

and HIV_2 in human sperm/plasma. It is 100% sensitive and 100% specific.

Reading: the presence or absence of antibodies to HIV_1 in serum sample was determined by comparing each strip with the negative and positive control strips.

Interpretation: the result was interpreted as positive, indeterminate, negative or invalid accordingly.

2.7 Definitions:

2.7.1. The body mass index was calculated by using the weight and height and classified as severe thinness, moderate thinness, marginal thinness and normal range. The patient was considered anaemic if his hemoglobin level below 11g/dl

2.7.2 HbsAg was used as a marker for hepatitis B infection.

2.7.3 HIV was tested by two kits, Vironostika (ELISA) and Enzygonst (EIA) and confirmed by western blot. The child was diagnosed as H IV positive after confirmation.

2.8 Statistical analysis:

Data was entered into SPSS (statistical package for social science) and EPI info computerized programs for analysis, and X^2 was used as a significant test with a P. value of $\leq$ 0.05.

2.9 Research team:

- The author
- Two lab technician
- Radiologist

2.10 Ethical consideration:

- Informed verbal consent was taken from the child
- Written approval was taken from Ministry of Social and Cultural Affairs Khartoum State
- Written consent was taken from NonGovernmental Organization responsible of street children in the alternate family care
- Children who were found positive for HIV were arranged for counselling.
- Children who were found to be anemic were treated.

3. RESULTS

The study group included 355 of street children from 6 centers resident in Khartoum State. And the following results were obtained:

3.1 Socio-demographic characteristics:

3.1.1 Age distribution:

Figure 1 shows the age distribution of children and their distribution among centers. The age ranged between 5-18 years with a mean (SD) of 13.4 years (± 2.8 years).

The commonest age group was 11 – 15 years, comprising 195 (54.9%) and the least was 5 – 7 years including 7 children (2%). When distributed among the centers, it is found that the commonest age group was 11- 15 years and the least age group was 5 – 7 with a P value of 0.0001.

3.1.2 Sex distribution:

Figure 2 shows the gender distribution of the study group, 300 (84.5%) were males and 55 (15.5%) were females.

3.1.3 Distribution of origin:

The majority of the study group was from Southern and Western regions. Eastern and Northern origin had the least numbers. 3.9% were foreigners as shown in Figure 3.

3.1.4 Duration of street life:

The duration of street life ranged between days and 13 years as shown in Table 1. The mean (SD) of street life was 32.5 months ± (30.4 months).

3.1.5 Educational level before street life:

The majority of the study group left education in the early grades of their basic school 249 (70.1%), 79 (22.3%) were illiterate, 7 (2.5%) left their families in the preschool age, and 18 (5.1%) had Khalwa Education as shown in Table 2.

3.1.6 Number of sibling:

Approximately half of the study group (50.4%) had 5-10 siblings, 135 (38%) had less than 5, 16 (4.6%) have none, and 5 (1.4%) did not know as shown in Figure 4.

3.1.7 Parents survival:

More than half of the study group parents' were a live, father only died in 82 (23.1%), mother only died in 27 (7.6%) and both parents died in 43 (12.1%) of the study group. Only 4 (1.1%) did not know their parents a live or not as shown in Figure 5.

Of the 122 children whose fathers' died, 40 (32.8%) were looked after by their mothers, 32 (26.2) by their siblings, 4 (3.3%) by stepfathers and 72 (59%) by others including uncles, aunts, grandfathers and grandmothers as shown in Figure 6.

Of the 70 children whose mothers' died, 9 (12.9%) were looked after their fathers, 7 (10%) by siblings, 4 (5.7%) by stepmothers and 50 (71.4%) were looked after by other including ants, uncles, grandfathers and grandmothers as shown in Table 3).

3.1.8 Father occupation:

Of the living 226 fathers 205 (90.7%) were working, 2 (0.9%) were disabled, 10 (4.4%) were not working and 9 (4%) replied don't know.

Of the working 205 fathers 108 (52.7%) were skilled workers, 64 (34.5%) were unskilled workers, 20 (9.8) were merchants, 2 (1%) were (*Sultans)* and 4 (2%) replied don't know as shown in Figure 7.

3.1.9 Mother Occupation:

Of the 281 living mothers, 171 (60.9%) were working, 96 (34.2%) were housewives, 4(1.4%) disabled and 10 children (3.6%) did not know.

Of the 171 working mother, 151 (88%) were unskilled workers 14 (8.2%) were skilled workers, 3 (1.8%) were professionals and 3 children (1.8%) did not know as shown in Figure 8.

3.1.10 Marital status of the fathers:

More than half (55.5%) of the fathers had no wife other than the mother of the child, 83 (23.4%) had one, 48 (13.5%) had two, 11 (3.1%) had three and 3 (0.8%) had more than 3 wives while 3 (0.8%) did not answered the question as shown in Table 4.

3.1.11 Mother and father relationship:

Mothers and fathers of the street children relationship was found as follows: 33 (9.3%) replied separation, 41 (11.6%) divorce, 109 (30.7%) widows 43(12.1%) both parents died 4 (1.1%) replied don't know and 125(35.2%) replied intact relationship as shown in Table 5.

3.2 Factors pushing and attracting children towards street life:

Problems inside the family were found in 302 (85.1%), 159 (44.8%) left home to collect money, 16 (4.5%) because of urban attraction, 6 (1.6%) due to war and 44 (12.4%) mentioned other causes including curiosity and problems with neighbors.

Of those 302 who had problems inside the family 120 (39.7%) mentioned poverty, 78 (25.8%) mentioned physical abuse, 82 (27.2%) death of the father. 27 (8.9%) death of the mother, 43 (14.2%) death of both parents, 79 (26.2%) problems between parents in a form of separation or divorce and 40 (13.2%) mentioned other problems.

Regarding the relationship of the child to his family, 114 (32.1%) had no relationship at all, 99 (27.9%) had weak relationship, 77 (21.7%) had moderate relationship and 65 (18.3%) had good relationship.

3.3 The impact of street life on the children:

3.3.1 Drug and substance abuse:

Children who admitted using drugs and addicting substances during the study duration were 155 (43.7%), of whom: 91(58.7%) used cigarettes, 84(54.1%) snuff, 23 (14.8%) benzene, 90 (58.5) glue, 10 (6.4) (*Bango*), 61(38.3%) (*Marisa*) and 18(11.6%) used (*Aragi*).

Children, who used Drug and substance before admission to the centers, were 221 (62.3%) of whom 142 (64.3%) used cigarettes, 117 (52.9%) snuff, 37

(16.7%) benzene, 153 (69.2%) glue, 21 (9.5%) (bango), 111 (50.2%) (*Marisa*) and 39 (17.6%) used (*Aragi*).

It's found that, there was a high proportion of drug and substances abuse during the study period among those who used Drug and substance before admission to the centers when compared with those who did not use Drug and substance before admission to the centers, this difference is statistically significant with a P. Value of< 0.0001 as shown in Table 6.

It's found that, both Drug and substance abuse before admission and at the time of the study period had a higher proportion among males rather than females, (50.3% vs. 10.9%) for those who used drug at the time of the study period, and (68% vs. 30.9%) among those who used drugs before admission to the center with a P. value of 0.0001 for each, as shown in Figure 9 & 10.

A higher proportion of Drug and substance abuse was observed among children in governmental care centers than non-governmental care centers, for those who used drugs during the study period and before admission to the centers, (51.2 % vs. 25.7%) and (71.6% vs. 40%) respectively the difference is statistically significant in both (P. value < 0.0001), (Figure 11 & 12).

There is a positive correlation between the age and Drug and substance abuse before admission to the center and during the study period as shown in Table 7 & 8. There was a negative correlation between the duration of stay in the centers and Drug and substance abuse during the study period as shown in Table 9.

Proportion of drug and substance abuse among children who used drug and substance before admission to the centers; correlates positively, with the

duration of street life. The result is statistically significant (P. value < 0.01), as shown in Table 10.

There is no significant difference in the Drug and substance abuse proportions with duration of street life among those who used drugs before admission to the center.

Figure 13 shows the correction of Drug and substance abuse among those who used drug before admission to the center in relation to the type of care.

The reasons of using drug and substance were mentioned as follows: For pleasure in 209 (91.7%), to forget problems in 16 (7%), to cope with hunger in 1 (0.4%) and 2 (0.9%) mentioned other reason.

Curiosity was the starting point of Drug and substance abuse in 108 (47.4%) while 110 (48.2%) were convinced by other street children and 10 (4.4%) were forced by other street children to start Drug and substance abuse.

Regarding the source of drugs, 214 (93.9%) got the drug from the market, 39 (17.1%) from the street children, 4 (1.8%) from others including (*Merisa*) and (*Aragi*) makers and none of them got it from those working in the rehabilitation centers.

3.3.2 Street children and police:

Approximately, three quarters of the study group 250 (70.4%) were captured before by the police, of whom 149 (59.6%) were captured to be admitted to the centers, 41 (16.4%) because of Drug and substance abuse, 99 (39.6%) found wondering and 48 (19.2%) were captured because they were involved in a crime.

3.3.3 Sexual practice among street children:

Approximately two fifth of the street children 139 (39.2%) had sexual practice, of whom 128 (92.1%) were heterosexuals, 6 (4.3%) were homosexuals and 5 (3.6%) had both practices.

Those who had single partners were 57 (41%), two 16 (11.5%), three 18 (12.9%) and those who had more than three partners were 48 (34.5%).

Fifty eight (41.7%) practiced sex more than once a week. 39 (28.1%) once a week, 11 (7.9%) once fortnight, 14 (10.1%) once a months, and 17 (12.2%) practiced sex occasionally.

When asked why they practiced sex, 133 (95.7%) mentioned voluntary for pleasure, 3 (2.2%) to meet some needs and 3 (2.2%) were forced to practice it.

It was found that, the older the age, the higher the proportion of sexual practice with a P. value < 0.0001 as shown in Figure 14.

Figure 15 shows that, there was a significant difference in proportions2of sexual practice in relation to duration of street life with a P. value < 0.022.

The longer the duration of stay in the rehabilitating centers, the least the proportions of sexual practice with a P. value < 0.0001 as shown in Figure 16, and was significantly higher among those who were looked after by governmental institutional centers when compared with those who were looked after by the non-governmental alternative family care (45.2% vs. 25.2%) with a P. value of 0.0001 as shown in Figure 17.

There was no significant difference in proportion of sexual practice in relation to gender.

3.4 Care providers:

Of the study group, 250 (70.4%) were looked after in institutional governmental centers, while 150 (29.6%) were looked after by the non-governmental organization in alternative families.

They ended up to the centers through the public order security campaigns (*Kasha*) in 206 (58%), 35 (9.9%) came by themselves, 81 (22.8%) brought by the organization, 8 (2.3%) came from reformatories and 25 (7%) came by court.

The duration of stay ranged between days and 5 years with a mean duration of 11.2 months.

Those who have residential care were 332 (93.5%), daytime program 10 (2.8%) and those who had weekly program were 13 (3.7%).

Health care was available inside the centers for 116 (32%) just in a form of dispensary stations.

Those who had residential program when were asked about the housing condition 27 (8.1%) considered it excellent, 243 (73.2%) good, 29 (8.7%) acceptable and only 33 (9.9%) thought that it is bad. When asked about how they were treated by the care providers, they responded excellent in 30 (8.5%), good in 271 (76.3%), acceptable in 35 (9.9%) and bad in 19 (5.4%) of the study group.

3.5 Nutritional assessment:

3.5.1 History:

3.5.1.1 Food items usually received at breakfast:

Of the study group, 351 (98.9%) receive bread, 23 (6.5%) receive meat, 322 (90.7%) receive legumes, 29 (8.2%) receive fat, 7 (2%) vegetables, 6 (1.7%) milk or milk product, while 5 (1.4%) receive ruminants of foods (*Carta*) usually at breakfast.

3.5.1.2 Food items received yesterday at breakfast:

Bread was received at breakfast the day before interviewing the child in 347 (97.8%) meat in 22 (6.2%) legumes in 300 (84.5%), vegetables in 33 (9.3%) and 5 (1.4%) of the study group receive ruminants of food.

3.5.1.3 Food items received at lunch usually:

Two hundred forty five (97.2%) mentioned that they usually are offered bread, 274 (77.2%) receive meat, 24 (6.8%) receive legumes, 287 (80.9%) receive fat, 79 (22.3%) receive vegetables and 4 (1.1%) receive remnants of food usually at launch.

3.5.1.4 Food items received at lunch yesterday

Bread was received the day before interviewing the child in 343 (96.7%), meet in 246 (69.3%) legumes in 40 (11.3%), fat in 256 (71.8%), vegetables in 71 (20.2%), milk or milk products in 7 (2%) and only 5 (1.4%).

3.5.1.5 Food items received usually at dinner:

Of the study group 341 (95.8%) receive bread, 17 (4.8%) receive meat, 15 (4.3%) receive fat, 129 (36.4%) receive legumes, 6 (1.7%) receive vegetables, 60 (16.9%) receive milk or milk products and 6 (1.7%) usually receive food remnants.

3.5.1.6 Food items received at dinner yesterday:

Bread was mentioned by 338 (95.2%), meat by 21 (6%), legumes by 116 (32.7%), fat by 18 (5.1%), vegetables by 8 (2.3%), milk or milk products by 51 (14.4%) and remnants of food was mentioned by 6 (1.7%) as shown in Table 11.

3.5.2 Examination:

3.5.2.1 Weight:

The weight of the study group ranged between 19-68.5kg with a mean (SD) of 38.4 $\pm$ 10.8.

3.5.2.2 Height:

The height of the study group ranged from 110 – 187 cm and with a mean (SD) of 153 $\pm$ 13.8.

3.5.3 Body mass index:

The body mass index of the study group ranged between 8.6 – 35.7 with a mean of 16 and standard deviation of 2.8.

It was found that, 175 (49.3%) of the study group were in the range of severe thinness, 45 (12.7%) were in the range of moderate thinness 66 (18.6%) were in the range of marginal thinness, and only a 69 (19.4%) were in the normal range.

The distribution of the body mass index in relation to the age had statistically significant difference with the severe thinness being more prevalent in the younger age group and the marginal thinness being more prevalent in the older age group, P. value < 0.001as shown in Figure 18.

Table 12 shows that all degrees of thinness were more prevalent in males when compared by females. The difference is statistically significant with a P. value of 0.001.

There was no statistically significant difference of the prevalence of malnutrition in relation to type of care.

There was statistically significant difference of the prevalence of malnutrition in relation to duration of street life, (P. value = 0.014), (Figure 19).

3.5.4 Hemoglobin level:

The hemoglobin level was done for 347 (97.7%) of the study group. Hemoglobin level ranged between 11 – 16 gm/dl, the mean hemoglobin level was13.14 gm/dl and the standard deviation of 1.07. Peripheral blood picture was not done because there was no hemoglobin level of a single child below the level of 11 gm/dl.

3.5.5 Vit. A deficiency:

There was no single child with signs of Vit A deficiency.

3.6 Health problems encounter street children:

3.6.1 Skin diseases:

A total of 151 children (42%) of the study group were found to have skin problems, of who 80 (52.9) complained of itching, 69(45.7%) complained of traumatic ulcers, 65 (43%) complained of skin rash and only 11 (7.3%) complained of change of the colour of the skin in a form of hypo- or hyperpigmentation.

Signs of skin abnormalities were found in 190 (53.5%) of the study group of whom 42 (22.1%) had ulcers, 82 (43.1%) had scratch match, 30 (15.8%) had hypopigmentation, 12 (6.3%) had hyperpigmentation, 50(26.3%) had skin rash and 71 (38.4%) had scars.

3.6.2 Scalp diseases:

Children who were found to have scalp problems were 80 (22.5%) of the study group, of whom 27 (33.7%) had hair loss, 20 (25%) had ulcers on the scalp, 42 (52.5%) had itching and 13 (16.2%) mentioned other complaints.

Signs on scalp examination were found in 54 (15.2%) of the study group of whom 15 (27.7%) have lice, 32 (29.2%) had tinea capitis, 18 (33.3%) had hair loss and 7 (12.9%) had scalp.

3.6.3 Sexually transmitted diseases:

Past history of sexually transmitted diseases were found in 87 (24.5%) of the study group, of whom 4 (4.6%) suffered genital ulcer, 20 (23%) suffered urethral discharge, 6 (6.9%) suffered testicular swelling, 4 (4.6%) testicular pain, 10 (11.5%) suprapubic pain, 8 (9.2%) vaginal discharge, 58(66.7%) burning micturition and 32 (36.8%) hematuria as shown in (table 13).

Children who suffered sexually transmitted diseases during the study period were 56 (15.8%) of the study group, of whom 5 (7.7%) suffered genital ulcer, 13 (20%) urethral discharge, 3 (4.6%) testicular swelling, 1 (1.5%) testicular pain, 7 (10.8%) suprapubic pain, 7 (10.8%) vaginal discharge, 38 (58.5%) burning micturition and 26 (40%) suffered hematuria as shown in Figure 20.

It was found that, there was significant difference in proportion of past history of sexually transmitted diseases in relation to age, the older the age, the higher the proportion of sexually transmitted diseases as shown in Table 14.

The proportion of sexually transmitted diseases during the study period was higher among those who had past history of transmitted diseases as shown in Table 15; the difference is statistically significant with a P. value < 0.0001.

On the other hand there was no statistically significant difference in proportion of past history of sexually transmitted diseases in relation to gender and duration of street life.

Figure 21 shows the longer the duration of stay in rehabilitation centers, the least the proportion of sexual practice. This difference is statistically significant with a P. value of 0.045.

There were a higher proportion of sexually transmitted diseases among children in the governmental care when compared with non-governmental care (22.8% vs. 7.6%), which was statistically significant P. value < 0.001 as shown in Figure 22.

3.6.4 Hepatitis B infection;

Hepatitis B infection was found in 39 (10.1%) of the study group as shown in Figure 23).

Hepatitis B infection was found to be more prevalent among children who were treated with tattooing or scarification (30% vs. 9.6%) and (15% vs. 8.2%), this difference is statistically significant with a P. value of 0.035 and 0.046 for tattooing and scarification respectively as shown in Table 16 and17.

There was no statistically significant difference in hepatitis B infection in relation to gender, age, duration of street life, duration of staying rehabilitating centers, sexually transmitted or sexual practice.

3.6.5 HIV infection:

Three children (0.9%) of the study group were found to be infected with HIV as shown in (figure 24).

It was planned to investigate children who were infected with HIV for tuberculosis, but these investigations were not done due to technical difficulties.

Table 1: Duration of street life among the study group

Duration in months	Frequency	Percentage
1-12	145	40.8
13-36	90	25.4
37-60	75	21.1
> 60	45	12.7
Total	**355**	**100.0**

Table 2: Educational level before street life among the study group

Educational level	**Frequency**	**Percentage**
Basic school	249	70.1
Illiterate	79	22.3
Khalwa	18	5.1
Preschool	7	2.5
Total	**355**	**100.0**

Table 3: Responsibility of children care after death of the mother

n= 70

Looked after by	**Frequency**	**Percentage**
Fathers	9	12.9
Siblings	7	10.0
Stepmothers	4	5.7
Others	50	71.4
Total	**70**	**100.0**

Table 4: Number of wives of the fathers of the study group other than the mothers

Number of wives other than the mother	Frequency	Percentage
None	197	55.50
One	83	23.40
Two	48	13.50
Three	11	3.10
> three	3	0.85
Don’t know	10	2.80
No answer	3	0.85
Total	**355**	**100.00**

Table 5: Relationship of mothers and fathers of the study group:

Relationship	Frequency	Percentage
Separation	33	9.3
Divorce	41	11.6
Widow	109	30.7
Both died	43	12.1
Intact	125	35.2
Unknown	4	1.1
Total	**355**	**100**

Table 6: Drug and substance abuse during the study period in relation to Drug and substance abuse before admission to the centers:

Drug and substance abuse before	**Drug and substance abuse now**		**Total**
	Yes (%)	**No (%)**	**(%)**
Yes	148 (67)	073 (33)	221 (62.3)
No	007 (05.2)	127 (94.8)	134 (37.7)
Total	**155 (43.7)**	**200 (56.3)**	**355 (100)**

P. value < 0.0001

Table 7: Drug and substance abuse by the children before admission to the center in relation to age

Age group (years)	Drug and substance abuse before		
	Yes (%)	**No (%)**	**Total (%)**
5-< 8	1 (14.3)	6 (85.7)	7 (2)
8 - <11	20 (37)	34 (63)	54 (15.2)
11 - <15	126 (64.6)	69(35.4)	195 (54.9)
≥ 15	74 (74.7)	25 (25.3)	99 (27.9)
Total	**221 (62.3)**	**134 (37.7)**	**355(100)**

P. value < 0.0001

Table 8: Drug and substance abuse by the children during the study period in relation to age

Age group (years)	Drug and substance abuse now				Total (%)
	Yes (%)	n	No (%)	n	
5-< 8	0 (0)		007 (100)		07 (02.0)
8 - <11	13 (24.1)		041 (75.9)		54 (15.2)
11 - <15	87(44.6)		108 (55.4)		195 (54.9)
≥ 15	55 (55.6)		044 (44.4)		99 (27.9)
Total	**155 (53.7)**		**200 (56.3)**		**355 (100.0)**

P. value < 0.0001

Table 9: Drug and substance abuse by the children during the study period in relation to the duration of stay in the center:

Duration of stay (in months)	**Drug and substance abuse now**		**Total (%)**
	Yes n (%)	**No n (%)**	
< 1	75 (55.2)	67 (47.2)	142 (40.0)
1-<12	61 (50)	61 (50)	122 (34.3)
12 - <36	12 (26.7)	33 (73.3)	45 (12.7)
≥ 36	7 (15.2)	39 (84.8)	46 (13.0)
Total	**155 (43.7)**	**200 (56.3)**	**355 (100.0)**

P. value < 0.0001

Table 10: Drug and substance abuse by the children before admission to the center in relation to duration of street life:

Duration of street life (in months)	**Drug and substance abuse before**		**Total (%)**
	Yes (%)	**No n (%)**	
1-12	90 (62.1)	55 (37.9)	145 (40.8)
13-36	61 (67.8)	29 (32.2)	90 (25.4)
37 - 60	36 (48.0)	39 (52.0)	75 (21.1)
> 60	34 (75.6)	11 (24.4)	45 (12.7)
Total	**221 (62.3)**	**134 (37.7)**	**355 (100.0)**

P. value < 0.01

Table11: Items of food usually received by the study group at breakfast, lunch and dinner.

(n = 355)

Items of food	Breakfast n (%)	Lunch n (%)	Dinner n (%)
Starch	351(98.9)	345 (97.2)	341 (95.8)
Meat	23(6-5)	274 (77.2)	17 (4.8)
Fat	29(8.2)	287 (80.9)	15 (4.3)
Legumes	322(40.7)	24 (6.8)	129 (36.4)
Vegetable	7 (2)	79 (22.3)	6 (1.7)
Milk or milk product	6 (1.7)	0 (0)	60 (16.9)
Remnant of food	5 (1.4)	4 (1.1)	6 (1.7)

Table 12: Body mass index in relation to gender

Gender	Body Mass Index				Total (%)
	Severe thinness (%)	Moderate thinness (%)	Marginal thinness(%)	Normal range (%)	
Male	150 (50)	41 (13.7)	61 (20.3)	48 (16)	300 (84.5)
Female	25 (45.5)	4 (7.3)	5 (9.1)	21 (38.2)	55 (15.5)
Total	175 (49.3)	45 (12.7)	66 (18.6)	69 (19.4)	355 (100.0)

P. value < 0.001

Table 13: Distribution of past history of sexually transmitted diseases among the study group

n=87

Disease	Frequency	Percentage
Genital ulcer	4	4.6
Urethral discharge	20	23
Testicular swelling	6	6.9
Testicular pain	4	4.6
Vaginal discharge	8	9.2
Burning micturition	58	66.7
Hematuria	32	36.8
Suprapubic pain	10	11.5

Table (14) Proportion of past history of sexually transmitted diseases among the study group in relation to age

Age (years)	PH of STD		Total
	Yes	No	n (%)
	n (%)	n (%)	
5-7	00(0)	07(100)	07(2)
8-10	07(13)	47(87)	54(15.2)
11-15	45(23.1)	150(76.9)	195(54.9)
>15	35(35.4)	64(64.6)	99(27.9)
Total	**87(24.5)**	**268(75.5)**	**355(100.0)**

P. value = 0.005

Table (15) Proportion STD during the study period among those who had P.H of STD

PH STD	STD during		Total (%)
	Yes	**No**	
	n (%)	**n (%)**	
Yes	47(54)	40 (46)	87(24.5)
No	18(6.7)	250(93.3)	268(75.5)
Total	**65(18.3)**	**290(81.7)**	**355(100.0)**

P. value < 0.0001

Table (16): Proportion of hepatitis B in relation to tattooing among the study group

Tattooing	Hepatitis B		Total %
	+ ve (%)	- ve(%)	
Yes	3 (30)	7 (70)	10 (2.8)
No	33 (9.6)	312 (90.4)	345 (97.2)
Total	**36 (10.1)**	**319 (89.9)**	**355 (100.0)**

P. value < 0.035

Table (17): Proportion of hepatitis B in relation to scarification of the study group

Scarification	Hepatitis B		Total %
	+ ve (%)	- ve (%)	
Yes	15 (15.3)	83 (84.7)	98 (27.6)
No	21 (8.2)	236 (91.8)	257(72.4)
Total	**36 (10.1)**	**319 (89.9)**	**355 (100.0)**

P. value < 0.046

4. DISCUSSION, CONCLUSIONS and RECOMMENDATIONS

4.1 DISCUSSION

4.1.1 Socio-demographic characteristics:

4.1.1.1 Age distribution:

The age of the study group ranged between 5 – 18 years with a peak age group of 11 – 15 years, this result is consistent with the result obtained by Angela Veale in Rwanda, EM Salem in Alexandria, Beyeny et al in Nazareth and Scanlon in Latin America with a very little difference in the range of the age and the commonest age group.[6, 24]

The commonest age group corresponds the age at which the children expected to pass from the basic school to secondary school, this explains that they can not afford to continue education and hence go to the street because of poverty.

4.1.1.2 Distribution of the study group in relation to gender:

It was found that 84.5% of the study groups were males, a similar result was reported by situation analysis – behavioral survey done by SNAP, the study of children of the (*sug*) full time and working street children, Khartoum, Sudan. [17, 21]

The predominance of males can be explained by the fact that Sudanese families traditionally tend to keep girls at home more than boys.

4.1.1.3 Educational level:

The majority of street children were found to have a basic school education, 249 (70.1%) of the study group, which is comparable with the result of street children in Zimbabwe of whom 60.1% had primary school. [29]

In this study, 97 (22.3%) were found to be illiterate which was similar to the result of street children in Zimbabwe of whom 25% were illiterate. In contrast, nearly half of the street children had at most basic schooling and 51.7% were illiterate, this result was obtained in situation - analysis survey. [21, 29]

4.1.1.4 Family background:

A high proportion of orphaned children was documented in this study This result is consistent with the result of street children in Rwanda who have high proportion of orphaned children. [24]

This result is the ultimate fate of loss of parents due to war and HIV/AIDS as many studies reported.

Also the study of street children of Alexandria whose family background as follows: 45% had step parents, 36% had a mother as the head of the family (13% due to death of father and 13% due to illness of their father) and 2% did not give any answer. [6]

Marital disruption were found in a form of separation in 33 (9.3%) and in a form of divorce 41 (11.6%) of children whose parents were not living together, consistent with the study of street children in south Western Nigeria, which revealed that the parents of street children had polygynous marriages which are also often characterized by marital disruption. [23]

This indicates that the family background instability and family disruption is a major cause of the phenomenon of street children.

4.1.2 The impact of street life on street children:

4.1.2.1 Drug and substance abuse:

Drug and substance abuse during the study period was found in 155 (43.7%) while children who abused drug and substance before admission to the centers were 221 (62.3%). These figures, more or less, similar to the figures of street children in Delhi which was 57.4% with the difference in the common drugs of substances used. [33]

Children who used drug and substance before admission to the centers constituted (71.6%) among children admitted in the governmental centers, during the study period this figure reduced to (51.2%), that means, there was a (20%) reduction in drug abuse in governmental centers. On the other hand, children who used drug and substance before admission to non-governmental centers constituted (40%), then it reduced to (25.7%) during the study period. That means (15%) reduction in drug and substance abuse. Despite this observed reduction, there is a need of more efforts considering drug and substance abuse.

4.1.2.2 Sexual practice:

It was found that, 139 (39.2%) had sexual practice, as in situation analysis-behavioral survey that revealed the sexual practice was found in 32.6%, but a very high proportion was reported by Montréal street children, 99.3% reported heterosexual relation. [43]

These un-safe sexual practices might lead to serious complications including sexually transmitted diseases, HIIV/AIDS, HB infection, unwanted pregnancy and un-safe abortion.

4.1.3 Nutritional assessment:

The majority of the study group in this study received 3 meals a day, while only 62% of street children receive 3 meals a day according to the socio-hygienic survey. [19]

Assessment was done in this study by body mass index, 175 (49.3%) were found in the range of severe thinness, 45 (12.7%) moderate thinness, 66 (18.6%) marginal thinness and only 69 (19.4%) were found in the normal range. The results are higher than what was reported by Abdelmoneim who found that, 20% of the study group were stunted, 36% were wasted and 44% were normal, and what was reported in the street children of Jakarta of whom 52% were stunted and 7% were wasted. [35, 36]

These differences can be explained by the fact that the majority of the study groups were Southerners, who were characteristically taller and thinner.

Vitamin A deficiency is not detected in this study, in contrast to Abdelmoenim study who found 7.3% of the study group had signs of Vitamin A deficiency. [35, 36]

4.1.4 Health problems encountered street children:

4.1.4.1 Sexually transmitted diseases:

In this study, past history of STD was found in 87 (24.5%) and STD during the study period in 65 (18.3%). STDs were found higher among males when compared to females. This result is in contrast with the result which was reported by Noël et al that the incidence of STDs was higher among females than males (16.7% vs. 9.8%); odds ratio1.83; (95% CI 1.05 – 3.02). [47]

4.1.4.2 Hepatitis B infection:

Of the study group, 39 (10.1%) were found to be positive for HBsAg, this result shows a very high prevalence compared to the result of Montreal street children of whom only 1.6% were found to be positive for HBsAg. It is lower than that reported by Banaga, who found 18% and 20% of the study group were positive for HBsAg and HBcAg respectively. Similarly to the results of Montreal street children, there was no statistically significant difference of HB infection in relation to sexual practice, type of sexual practice or number of partners. [35, 36, 43]

The study revealed that, there was statistically significant relation between HB infection to tattooing and scarification.

4.1.4.3 HIV infection:

It was found that, 3 (0.9%) of the study group were infected with HIV. This figure higher than that reported by Banaga and Noell et al, who found in 0.3% of their study group infected with HIV. It is low when compared by the result of situation analysis- behavioral survey done by SNAP, in which 2.1% of the study group of street children was positive for HIV. [21, 35, 36, 47]

4.2. CONCLUSION

- The street children in rehabilitation centers in Khartoum were predominantly adolescent boys, who left school in the early grades of basic education. Their family background was disruptive with high proportion of parents' death, separation and divorce.

- The impact of street life upon street children was obvious since the majority of them were involved in drug and substance abuse and sexual practice.

- Drug and substance abuse is very common among street children with high percentage of legally allowed drug or substance like cigarette, snuff and glue. Drug and substance abuse was found more common in male gender, governmental care, older age, longer duration of street life and shorter duration of stay in rehabilitating centers.

- Sexual practice is common, found among 139 (39.1%), the majority of them were heterosexual, 6 (4.3%) were homosexual and 5(3.3%) practice both types. Sex exchange for needs is very rare. Higher proportion of sexual practice was found in older ages, shorter duration of stay in centers and in governmental care.

- The commonest health problem encountered the street children include skin diseases, sexually transmitted diseases and HB infection.

- Sexually transmitted diseases were found in 65 (18.3%), a higher proportion was found in governmental care and children with shorter stay in the centers.
- There was a high prevalence of malnutrition with low body mass index and less affection of the height.
- HBV infection represented 39 (10.1%) of the study group with higher proportion among children treated with tattooing and scarification.
- HIV was found in 3 (0.9%) of the study group.

4.3 Recommendation:

- The ministry of social and cultural affairs should support poor families and orphaned children at the community level.
- The Ministry of Education should secure at least free basic school chances of poor and orphaned children.
- Rehabilitating centers should be supplemented with good infrastructures to accommodate children who admitted there.
- The Ministry of Health should help to avail regular continuous health facilities in the rehabilitating centers.
- Regular periodic screening for HB virus and HIV infection should be done.
- The Ministry of Education should support the centers with free and formal common stream of education.
- Vocational rehabilitation should be enforced to secure permanent job for them after rehabilitation and discharge.
- The centers should be supplemented by enough well-trained and competent psychosocial team to help in the psychosocial rehabilitation of the admitted children.
- Further studies to re-evaluate the situation were recommended.

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